United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Farmington District Office
1235 La Plata Highway
Farmington, New Mexico 87401

IN REPLY REFER TO:
3162 (07327)

May 16, 1995

RECEIVED
JUN - 1 1995
OIL CON. DIV.
DIST. 3

George Sharpe
Merrion Oil and Gas Corporation
P.O. Box 840
Farmington, New Mexico 87499

Dear Mr. Sharpe:

We have reviewed your application for temporary revision of existing allocation factors for commingled Fruitland Coal and Pictured Cliffs production in the following well:

No. 1 Carnahan Com
990' FSL, 990' FEL
Section 35, T-30N, R-12W

You requested approval to temporarily allocate all production to the Fruitland Coal formation based on the fact that current line pressure is equal to, or exceeds, surface pressure from the Pictured Cliffs formation.

Your application to allocate 100% of the production to the Fruitland Coal is hereby approved for as long as sales line pressure exceeds 200 PSI, or until compression is installed between the wellhead and the sales meter. Please notify this office via Sundry notice when production allocation reverts back to the previously approved allocation factors.

If you have any questions regarding this correspondence, please address them to Ray Hager (505) 599-6366.

Sincerely,

Duane Spencer
Chief, Branch of Reservoir Management

Enclosures - 1
1-Application

cc:
NMOCD, Aztec, NM

Distribution: **Orig+4 (BLM); 1-Crystal; 1-Accounting; 1-Well File**

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

SUNDRY NOTICES AND REPORTS ON WELLS

Do not use this form for proposals to drill or to deepen or reentry to a different reservoir.
Use "APPLICATION FOR PERMIT—" for such proposals

SUBMIT IN TRIPLICATE

5. Lease Designation and Serial No.
SF-068990 / FEE

6. If Indian, Allottee or Tribe Name

7. If Unit or CA, Agreement Designation

1. Type of Well
☐ Oil Well ☒ Gas Well ☐ Other

8. Well Name and No.
Carnahan Com 1

2. Name of Operator
Merrion Oil & Gas Corporation

9. API Well No.
30-045-08946

3. Address and Telephone No.
P. O. Box 840, Farmington, New Mexico 87499 **(505) 327-9801**

10. Field and Pool, or Exploratory Area
Basin Fruitland Coal
Fulcher Kutz PC Commingle

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)
990' fsl & 990' fel
Section 35, T30N, R12W

11. County or Parish, State
San Juan,
New Mexico

12. CHECK APPROPRIATE BOX(s) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION	
☒ Notice of Intent	☐ Abandonment	☐ Change of Plans
☐ Subsequent Report	☐ Recompletion	☐ New Construction
☐ Final Abandonment Notice	☐ Plugging Back	☐ Non-Routine Fracturing
	☐ Casing Repair	☐ Water Shut-Off
	☐ Altering Casing	☐ Conversion to Injection
	☒ Other **See below**	☐ Dispose Water

(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

13. Describe Proposed or Completed Operations (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

The subject lease is in a communitization agreement sharing Basin Fruitland Coal production from the subject well. The Pictured Cliffs formation is commingled with the Fruitland Coal in the well.

Enclosed is NMOCD's Order No. R-10149 approving the commingling of the Pictured Cliffs and the Fruitland and specifying the production allocation formula. Also enclosed is a letter to the NMOCD requesting approval to temporarily (until a compressor can be installed) allocate all production to the Fruitland. Please indicate your approval of the allocation formula(s) by signing and returning a copy of this sundry.

14. I hereby certify that the foregoing is true and correct

Signed _____ Title **Petroleum Engineer** Date **4/25/95**

(This space for Federal or State office use)

Approved by _____ Title _____ Date _____
Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instruction on Reverse Side

NMOCD

MERRION

OIL & GAS

April 24, 1995

070 FARMINGTON, NM

Mr. William J. Lemay
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87503

Re: Application for Revised Allocation Formula
Order No. R-10149
Carnahan Com #1
Fulcher Kutz PC and Basin Fruitland Coal Commingle
SE/4 Section 35, T30N, R12W
San Juan County, New Mexico

Dear Mr. Lemay:

Merrion Oil & Gas Corporation is requesting your approval to temporarily revise the allocation formula for the Carnahan Com #1. This letter outlines the reasons for the request.

ORIGINAL ALLOCATION FORMULA

Appendix A of Order No. R-10149 (see attached) outlines the allocation formula currently approved by the State. Using the shut in pressure from the PC production test to determine a gas formation volume factor, reserves are allocated to the PC based on volumetric log calculations. The first month's gas production is split between the PC and the Fruitland Coal based on their individual production tests. Using the first month's allocated gas rate for the PC along with the volumetric reserves, production is then calculated every month thereafter for the PC assuming an exponential decline rate. Future Fruitland Coal production is calculated to be the difference between the total well production and the calculated PC production.

TEST DATA

The following data was taken upon initial completion of the PC and Fruitland Coal:

1.) PC Reserves

a.) 92 hour shut in surface pressure = 206 psig on 10-30-94

b.) Calculated BHP @ 1563' = 229 psia

c.) 10-24-94 analysis of PC BTU Content = 1.194 MMBTU/MCF

610 Reilly Avenue • P.O. Box 840 • Farmington, New Mexico 87499 • 505-327-9801 / 505-326-5900 (Fax)

PC Reserves = 1074 * Press * BTU (from Exhibit A)

PC Res = 1074 * 229 * 1.194 = 294,000 MMBTU

2.) Initial PC Test

Final flow = 101 MCFD, 30 BWD, Pt = 37 psi, Pc = 122 psi (Nov. 11, 1994)

3.) Initial Fruitland Coal Test

Final pump test = 38 MCFD, 56 BWD, Pt = 80 psi, Pc = 280 psi (Dec. 17, 1994)

Fruitland BTU content = 0.977 MMBTU/MCF

PROBLEMS WITH CURRENT ALLOCATION

The well's first sustained "commingled" production was in March of 1995 when, after finally getting the well on pump, it made 411 MMBTUs and 711 Bbls of water in 20 days on line with a tubing and casing pressure of 200 psi. The average daily rate was 20.6 MMBTU/day and 35.6 BWPD.

If this were allocated between the PC and Fruitland per the current formula, the initial production rate for the PC would be 14.9 MMBTU/day, or very near its economic limit. At that rate it would take an unrealistic 54 years to recover the 294,000 MMBTU of reserves.

In actuality, the PC is not producing at all. Due to high line pressure, the pumping tubing and casing pressures of 200 psi are virtually equal to the PC shut in pressure of 206 psi. Therefore, it would be unrealistic to try to allocate any production to the PC.

RECOMMENDED REVISED ALLOCATION

It is recommended that all production be allocated to the Fruitland Coal on a temporary basis. If and when gas prices rebound, we will install compression, at which point the PC will begin to contribute production. We will notify you when that occurs and go back to the original allocation formula at that point in time. We feel this is in the best interest of all correlative rights because it:

a.) Allows the well to stay on production, generating revenue for all the owners in the 320 acre spacing unit;

b.) Still allows all the allocated PC reserves to eventually be recovered at economic rates, protecting the correlative rights of the PC owners on that 160 acre spacing unit.

SUMMARY

Merrion feels that this temporary change in the allocation formula is prudent and necessary. The well has produced in April, 1995, but is currently shut-in pending your approval of this revised allocation procedure. Please indicate your approval by signing and returning a copy of this letter to our office.

Sincerely,

George F. Sharpe
Manager - Oil & Gas Investments

Approved: _____
By: _____
Title: _____
Date: _____

xc: NMOCD - Aztec
BLM - Farmington

Certified copies sent to:

1.) Amoco Production Co.
P. O. Box 800
Denver, Colorado 80201

2.) Conoco, Inc.
10 Desta Drive, Suite 100W
Midland, Texas 79705-4500

3.) Meridian Oil
P. O. Box 4289
Farmington, New Mexico 87499

4.) Southland Royalties, Inc.
P. O. Box 4289
Farmington, New Mexico 87499

Exhibit "A"

CASE NO. 10970

DIVISION ORDER NO. R-10149

MERRION OIL & GAS CORPORATION

CARNAHAN COM WELL NO. 1

API NO. 30-045-08946

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

Step One: Calculate Pictured Cliffs Reserves From Volumetrics

$$Gp = \{7758 * \emptyset * h * A * (1-Sw)/Bg\} * \text{BTU Factor} * Rf$$

WHERE:

- Gp = ULTIMATE PICTURED CLIFFS GAS RESERVES IN MMBTU
- 7758 = STANDARD BARRELS PER ACRE-FOOT CONVERSION
- Ø = POROSITY = 18%
- h = NET PAY THICKNESS = 30 FEET
- A = DRAINAGE AREA = 160 ACRES
- Sw = WATER SATURATION = 50%
- Bg = GAS FORMATION VOLUME FACTOR (RVB/Mcf) = (5.04 * z * T)/P.

  WHERE:

  z = GAS DEVIATION FACTOR AT RESERVOIR CONDITIONS = 0.94.

  T = RESERVOIR TEMPERATURE (DEGREES) = 100 F = 560 R.

  P = PICTURED CLIFFS RESERVOIR PRESSURE AS MEASURED DURING INITIAL COMPLETION (PSIA)
- BTU FACTOR = MMBTU/MCF FROM INITIAL PICTURED CLIFFS GAS ANALYSIS
- Rf (RESERVOIR RECOVERY FACTOR) = 85%

THEREFORE:

Gp = {7758 Bbls./ac.-ft. * 0.18 * 30 ft. * 160 ac. (1.0 - 0.5) / [5.04 * 0.94 * 560 / P]} * BTU Factor * 0.85

OR

Gp = 1074 (MCF/PSIA) * P (PSIA) * BTU Factor (MMBTU / Mcf)

Step Two: Calculate Pictured Cliffs Initial Monthly Production Rate

$$Qpc(1) = Qt(1) * \{Qpc(test) / [Qpc(test) + Qfc(test)]\}$$

And

$$Qpci(decline) = Qpc(1) * 30.4 / Days\ Produced(1)$$

WHERE:

Qpc(1) = FIRST MONTH PICTURED CLIFFS PRODUCTION IN MMBTU/MONTH
Qt(1) = FIRST MONTH TOTAL PRODUCTION IN MMBTU/MONTH
Qpc(test) = FINAL PICTURED CLIFFS FLOW TEST IN MMBTU/DAY
Qfc(test) = FINAL FRUITLAND COAL FLOW TEST IN MMBTU/DAY
Days Produced(1) = NUMBER OF DAYS WELL WAS ON IN THE FIRST MONTH
Qpci(decline) = INITIAL MONTHLY PRODUCTION RATE TO BE USED IN FORECASTING FUTURE PICTURED CLIFFS PRODUCTION IN MMBTU/MONTH

Step Three: Calculate Pictured Cliffs Abandonment Rate

$$Qpca = Operating\ Cost / \{Price * NRI * (1.0 - Tax)\}$$

WHERE:

Qpca = PICTURED CLIFFS ABANDONMENT RATE IN MMBTU/MONTH
Operating Cost = MONTHLY OPERATING EXPENSE = $500.00/MONTH
Price = WELLHEAD GAS PRICE = $1.65/MMBTU
NRI = AVERAGE NET REVENUE INTEREST = 84%
Tax = STATE AND LOCAL SEVERANCE AND ADVALOREM TAXES = 9%

THEREFORE:

Qpca = $500.00 / {$1.65 * 0.84 * (1.0 - 0.09)} = 396 MMBTU/MONTH

Step Four: Calculate Pictured Cliffs Decline Rate

$$D = \{Qpci(decline) - Qpca\} / Gp$$

WHERE:

D = NOMINAL DECLINE RATE (Fraction/Month)
Qpci(decline) = INITIAL MONTHLY PRODUCTION RATE IN MMBTU/MONTH AS

CALCULATED IN STEP TWO

Qpca = PICTURED CLIFFS ABANDONMENT RATE IN MMBTU/MONTH
= 396 MMBTU/MONTH
Gp = ULTIMATE PICTURED CLIFFS GAS RESERVES IN MMBTU AS CALCULATED IN STEP ONE.

Step Five: Calculate Future Pictured Cliffs Production In Future Month "X"

$$Qpc(x) = Qpci(decline) * \exp\{-D * t(x)\}$$

WHERE:

Qpc(x) = PICTURED CLIFFS PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"
Qpci(decline) = INITIAL MONTHLY PRODUCTION RATE IN MMBTU/MONTH AS CALCULATED IN STEP TWO
D = NOMINAL DECLINE RATE (Fraction/Month) AS CALCULATED IN STEP FOUR
t(x) = NUMBER OF MONTHS FROM INITIAL PRODUCTION TO A GIVEN MONTH "x"

Step Six: Calculate Fruitland Coal Rate In Future Month "X"

$$Qfc(x) = Qt(x) - Qpc(x)$$

WHERE:

Qfc(x) = FRUITLAND COAL PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"
Qt(x) = TOTAL WELL PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"
Qpc(x) = PICTURED CLIFFS PRODUCTION IN MMBTU FOR A GIVEN MONTH "x" AS CALCULATED IN STEP FIVE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 10970
ORDER NO. R-10149

APPLICATION OF MERRION OIL & GAS CORPORATION FOR DOWNHOLE COMMINGLING AND AN UNORTHODOX COAL GAS WELL LOCATION, RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 12, 1994, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 11th day of July, 1994 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant in this case, Merrion Oil & Gas Corporation ("Merrion"), is the owner and operator of the Carnahan Com Well No. 1 (API No. 30-045-08946), located 990 feet from the South and East lines (Unit P) of Section 35, Township 30 North, Range 12 West, NMPM, San Juan County, New Mexico.

(3) Said well was originally drilled and completed in the winter of 1960-1961 as a Basin-Dakota gas well. In early 1972 the Dakota interval was plugged back and the well was recompleted to the Flora Vista-Mesaverde Pool where it produced until May, 1990, at which time it was shut-in when it was no longer able to produce from the Mesaverde interval. At this time Merrion is proposing to plug back the existing Mesaverde perforations in the wellbore and recomplete up-hole in both the Undesignated Fulcher Kutz-Pictured Cliffs Pool, in which the SE/4 of said Section 35 will be dedicated to form a standard 160-acre gas spacing and proration unit, and the Basin-Fruitland Coal (Gas) Pool, in which the E/2 of said Section 35 will be dedicated to form a standard 320-acre gas spacing and proration unit.

(4) The applicant now seeks authority to commingle production from both the Pictured Cliffs and Fruitland Coal intervals in said wellbore.

(5) Since the proposed recompletion of the well into the Basin-Fruitland Coal (Gas) Pool would result in the location being an "off-pattern" unorthodox coal gas well location, Merrion originally sought in this matter an exception to the well location restriction provisions (see Rule 7) of the Special Rules and Regulations for the Basin Fruitland Coal (Gas) Pool, as promulgated by Division Order No. R-8768, as amended.

(6) Subsequent to this hearing the Division issued on May 19, 1994 Administrative Order NSL-3393, which order approved the subject Carnahan Com Well No. 1 as an unorthodox Basin-Fruitland Coal Gas well location; therefore, that portion of the immediate application requesting approval of an unorthodox coal gas well location for said well is deemed unnecessary and should now be dismissed.

(7) Testimony presented by the applicant indicates that gas production capabilities from both the Pictured Cliffs and Fruitland Coal intervals in this general area of the San Juan Basin are expected to be marginal in nature, thereby making the downhole commingling of both zones practical in order to adequately recover Basin-Fruitland Coal gas and conventional Pictured Cliffs gas reserves underlying both respective proration units in a prudent manner.

(8) The ownership within the Basin-Fruitland Coal (Gas) Pool and the Undesignated Fulcher Kutz-Pictured Cliffs Gas Pool underlying each respective proration unit is not common.

(9) The applicant has notified all working interests owning an interest in either the Pictured Cliffs or Fruitland Coal interval within the subject proration units of its proposed downhole commingling.

(10) The applicant further demonstrated through its evidence and testimony that:

(a) there will be no crossflow between the two commingled pools;

(b) neither commingled zone exposes the other to damage by produced liquids;

(c) the fluids from each zone are compatible with the other;

(d) the bottomhole pressure of the lower pressure zone should not be less than 50 percent of the bottomhole pressure of the higher pressure zone adjusted to a common datum; and,

(e) the value of the commingled production is not less than the sum of the values of the individual production.

(11) No offset operator and/or interest owner appeared at the hearing in opposition to the proposed application.

(12) Due to the nature of gas production from the Basin-Fruitland Coal (Gas) Pool, straight allocation of gas volumes from both zones is not appropriate. The applicant therefore seeks the adoption of a monthly allocation formula, based on initial production test and known/assumed parameters from the Pictured Cliffs zone whereby its initial rate, estimated ultimate recovery, and decline rate can be determined. Any production rate over what is calculated for the Pictured Cliffs utilizing the applied formula can be attributed to the Fruitland coal gas interval. See Exhibit "A" attached hereto and made a part hereof for additional reference.

(13) Approval of this application is in the best interest of conservation, will serve to prevent waste and protect correlative rights.

(14) The operator should be responsible for reporting the monthly gas production from said well by utilizing the proposed allocation formula.

(15) An annual report should be submitted by the operator to both the Aztec and Santa Fe offices of the Division showing the complete computations for each month.

(16) Any condensate production should be allocated entirely to the Pictured Cliffs interval. Water production should be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

(17) Any change in the method of gas allocation between the two pools should be made only after due notice and hearing.

(18) To afford the Division an opportunity to assess the potential of waste and to expeditiously order the appropriate remedial action, the operator should notify the Aztec District Office of the Division any time the subject well is shut-in for seven consecutive days.

IT IS THEREFORE ORDERED THAT:

(1) The application of Merrion Oil & Gas Corporation ("Merrion"), for authority to commingle Undesignated Fulcher Kutz-Pictured Cliffs Pool gas and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Carnahan Com Well No. 1 (API No. 30-045-08946), located 990 feet from the South and East lines (Unit P) of Section 35, Township 30 North, Range 12 West, NMPM, San Juan County, New Mexico, is hereby approved.

(2) Said well shall be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 35 and to a standard 160-acre gas spacing unit for the Undesignated Fulcher Kutz-Pictured Cliffs Pool being the SE/4 of said Section 35.

(3) The portion of this application requesting an unorthodox coal gas well location for the subject well shall be dismissed.

(4) The allocation of gas from both zones shall be subject to the monthly allocation formula hereby adopted for this well, as further referenced in Exhibit "A" attached hereto and made a part hereof.

(5) The operator is responsible for reporting the monthly gas production from the subject well to the Division by utilizing the allocation formula herein adopted.

(6) Any condensate production from the subject well shall be allocated entirely to the Undesignated Fulcher Kutz-Pictured Cliffs Pool. Water production shall be reported in a manner acceptable to the supervisor of the Aztec District Office of the Division.

(7) Any variance in the method of gas allocation herein approved by this order shall be made only after due notice and hearing.

(8) The operator of the subject well shall immediately notify the supervisor of the Aztec District Office of the Division any time the well has been shut-in for seven consecutive days and shall concurrently present, to the Division, a plan for remedial action.

(9) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L

Exhibit "A"

CASE NO. 10970

DIVISION ORDER NO. R-10149

MERRION OIL & GAS CORPORATION

CARNAHAN COM WELL NO. 1

API NO. 30-045-08946

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

Step One: Calculate Pictured Cliffs Reserves From Volumetrics

$$Gp = \{7758 * Ø * h * A * (1-Sw)/Bg\} * BTU\ Factor * Rf$$

WHERE:

- **Gp** = ULTIMATE PICTURED CLIFFS GAS RESERVES IN MMBTU
- **7758** = STANDARD BARRELS PER ACRE-FOOT CONVERSION
- **Ø** = POROSITY = 18%
- **h** = NET PAY THICKNESS = 30 FEET
- **A** = DRAINAGE AREA = 160 ACRES
- **Sw** = WATER SATURATION = 50%
- **Bg** = GAS FORMATION VOLUME FACTOR (RVB/Mcf) = (5.04 * z * T)/P.

  WHERE:

  - z = GAS DEVIATION FACTOR AT RESERVOIR CONDITIONS = 0.94.
  - T = RESERVOIR TEMPERATURE (DEGREES) = 100 F = 560 R.
  - P = PICTURED CLIFFS RESERVOIR PRESSURE AS MEASURED DURING INITIAL COMPLETION (PSIA)

- **BTU FACTOR** = MMBTU/MCF FROM INITIAL PICTURED CLIFFS GAS ANALYSIS
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THEREFORE:

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OR

Gp = 1074 (MCF/PSIA) * P (PSIA) * BTU Factor (MMBTU / Mcf)

Step Two: Calculate Pictured Cliffs Initial Monthly Production Rate

$$Qpc(1) = Qt(1) * \{Qpc(test) / [Qpc(test) + Qfc(test)]\}$$

And

$$Qpci(decline) = Qpc(1) * 30.4 / Days\ Produced(1)$$

WHERE:

Qpc(1)	=	FIRST MONTH PICTURED CLIFFS PRODUCTION IN MMBTU/MONTH
Qt(1)	=	FIRST MONTH TOTAL PRODUCTION IN MMBTU/MONTH
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Days Produced(1)	=	NUMBER OF DAYS WELL WAS ON IN THE FIRST MONTH
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Step Three: Calculate Pictured Cliffs Abandonment Rate

$$Qpca = Operating\ Cost / \{Price * NRI * (1.0 - Tax)\}$$

WHERE:

Qpca	=	PICTURED CLIFFS ABANDONMENT RATE IN MMBTU/MONTH
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$$D = \{Qpci(decline) - Qpca\} / Gp$$

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CALCULATED IN STEP TWO

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= 396 MMBTU/MONTH

Gp = ULTIMATE PICTURED CLIFFS GAS RESERVES IN MMBTU AS CALCULATED IN STEP ONE.

Step Five: Calculate Future Pictured Cliffs Production In Future Month "X"

$$Qpc(x) = Qpci(decline) * \exp\{-D * t(x)\}$$

WHERE:

Qpc(x) = PICTURED CLIFFS PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"

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D = NOMINAL DECLINE RATE (Fraction/Month) AS CALCULATED IN STEP FOUR

t(x) = NUMBER OF MONTHS FROM INITIAL PRODUCTION TO A GIVEN MONTH "x"

Step Six: Calculate Fruitland Coal Rate In Future Month "X"

$$Qfc(x) = Qt(x) - Qpc(x)$$

WHERE:

Qfc(x) = FRUITLAND COAL PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"

Qt(x) = TOTAL WELL PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"

Qpc(x) = PICTURED CLIFFS PRODUCTION IN MMBTU FOR A GIVEN MONTH "x" AS CALCULATED IN STEP FIVE

Distribution: **Orig+4 (BLM); 1-Crystal; 1-Accounting; 1-Well File**

Form 3160-5
(June 1990)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
Budget Bureau No. 1004-0135
Expires: March 31, 1993

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San Juan,
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14. I hereby certify that the foregoing is true and correct

Signed _____ Title **Petroleum Engineer** Date **4/25/95**

(This space for **George Sharpe**)

Approved by _____ Title _____ Date _____

Conditions of approval, if any:

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

*See Instructions on Reverse Side

NMOCD

MERRION

OIL & GAS

April 24, 1995

070 FARMINGTON, NM

Mr. William J. Lemay
New Mexico Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87503

Re: Application for Revised Allocation Formula
Order No. R-10149
Carnahan Com #1
Fulcher Kutz PC and Basin Fruitland Coal Commingle
SE/4 Section 35, T30N, R12W
San Juan County, New Mexico

Dear Mr. Lemay:

Merrion Oil & Gas Corporation is requesting your approval to temporarily revise the allocation formula for the Carnahan Com #1. This letter outlines the reasons for the request.

ORIGINAL ALLOCATION FORMULA

Appendix A of Order No. R-10149 (see attached) outlines the allocation formula currently approved by the State. Using the shut in pressure from the PC production test to determine a gas formation volume factor, reserves are allocated to the PC based on volumetric log calculations. The first month's gas production is split between the PC and the Fruitland Coal based on their individual production tests. Using the first month's allocated gas rate for the PC along with the volumetric reserves, production is then calculated every month thereafter for the PC assuming an exponential decline rate. Future Fruitland Coal production is calculated to be the difference between the total well production and the calculated PC production.

TEST DATA

The following data was taken upon initial completion of the PC and Fruitland Coal:

1.) PC Reserves

a.) 92 hour shut in surface pressure = 206 psig on 10-30-94

b.) Calculated BHP @ 1563' = 229 psia

c.) 10-24-94 analysis of PC BTU Content = 1.194 MMBTU/MCF

610 Reilly Avenue • P.O. Box 840 • Farmington, New Mexico 87499 • 505-327-9801 / 505-326-5900 (Fax)

PC Reserves = 1074 * Press * BTU (from Exhibit A)

PC Res = 1074 * 229 * 1.194 = 294,000 MMBTU

2.) Initial PC Test

Final flow = 101 MCFD, 30 BWD, Pt = 37 psi, Pc = 122 psi (Nov. 11, 1994)

3.) Initial Fruitland Coal Test

Final pump test = 38 MCFD, 56 BWD, Pt = 80 psi, Pc = 280 psi (Dec. 17, 1994)

Fruitland BTU content = 0.977 MMBTU/MCF

PROBLEMS WITH CURRENT ALLOCATION

The well's first sustained "commingled" production was in March of 1995 when, after finally getting the well on pump, it made 411 MMBTUs and 711 Bbls of water in 20 days on line with a tubing and casing pressure of 200 psi. The average daily rate was 20.6 MMBTU/day and 35.6 BWPD.

If this were allocated between the PC and Fruitland per the current formula, the initial production rate for the PC would be 14.9 MMBTU/day, or very near its economic limit. At that rate it would take an unrealistic 54 years to recover the 294,000 MMBTU of reserves.

In actuality, the PC is not producing at all. Due to high line pressure, the pumping tubing and casing pressures of 200 psi are virtually equal to the PC shut in pressure of 206 psi. Therefore, it would be unrealistic to try to allocate any production to the PC.

RECOMMENDED REVISED ALLOCATION

It is recommended that all production be allocated to the Fruitland Coal on a temporary basis. If and when gas prices rebound, we will install compression, at which point the PC will begin to contribute production. We will notify you when that occurs and go back to the original allocation formula at that point in time. We feel this is in the best interest of all correlative rights because it:

a.) Allows the well to stay on production, generating revenue for all the owners in the 320 acre spacing unit;

b.) Still allows all the allocated PC reserves to eventually be recovered at economic rates, protecting the correlative rights of the PC owners on that 160 acre spacing unit.

SUMMARY

Merrion feels that this temporary change in the allocation formula is prudent and necessary. The well has produced in April, 1995, but is currently shut-in pending your approval of this revised allocation procedure. Please indicate your approval by signing and returning a copy of this letter to our office.

Sincerely,

George F. Sharpe
Manager - Oil & Gas Investments

Approved: _____
By: _____
Title: _____
Date: _____

xc: NMOCD - Aztec
BLM - Farmington

Certified copies sent to:

1.) Amoco Production Co.
P. O. Box 800
Denver, Colorado 80201

2.) Conoco, Inc.
10 Desta Drive, Suite 100W
Midland, Texas 79705-4500

3.) Meridian Oil
P. O. Box 4289
Farmington, New Mexico 87499

4.) Southland Royalties, Inc.
P. O. Box 4289
Farmington, New Mexico 87499

Exhibit "A"

CASE NO. 10970

DIVISION ORDER NO. R-10149

MERRION OIL & GAS CORPORATION

CARNAHAN COM WELL NO. 1

API NO. 30-045-08946

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

Step One: Calculate Pictured Cliffs Reserves From Volumetrics

$$Gp = \{7758 * \emptyset * h * A * (1-Sw)/Bg\} * BTU\ Factor * Rf$$

WHERE:

- Gp = ULTIMATE PICTURED CLIFFS GAS RESERVES IN MMBTU
- 7758 = STANDARD BARRELS PER ACRE-FOOT CONVERSION
- Ø = POROSITY = 18%
- h = NET PAY THICKNESS = 30 FEET
- A = DRAINAGE AREA = 160 ACRES
- Sw = WATER SATURATION = 50%
- Bg = GAS FORMATION VOLUME FACTOR (RVB/Mcf) = (5.04 * z * T)/P.

  WHERE:

  - z = GAS DEVIATION FACTOR AT RESERVOIR CONDITIONS = 0.94.
  - T = RESERVOIR TEMPERATURE (DEGREES) = 100 F = 560 R.
  - P = PICTURED CLIFFS RESERVOIR PRESSURE AS MEASURED DURING INITIAL COMPLETION (PSIA)
- BTU FACTOR = MMBTU/MCF FROM INITIAL PICTURED CLIFFS GAS ANALYSIS
- Rf (RESERVOIR RECOVERY FACTOR) = 85%

THEREFORE:

Gp = {7758 Bbls./ac.-ft. * 0.18 * 30 ft. * 160 ac. (1.0 - 0.5) / [5.04 * 0.94 * 560 / P]} * BTU Factor * 0.85

OR

Gp = 1074 (MCF/PSIA) * P (PSIA) * BTU Factor (MMBTU / Mcf)

Step Two: Calculate Pictured Cliffs Initial Monthly Production Rate

$$Qpc(1) = Qt(1) * \{Qpc(test) / [Qpc(test) + Qfc(test)]\}$$

And

$$Qpci(decline) = Qpc(1) * 30.4 / Days\ Produced(1)$$

WHERE:

Qpc(1) = FIRST MONTH PICTURED CLIFFS PRODUCTION IN MMBTU/MONTH
Qt(1) = FIRST MONTH TOTAL PRODUCTION IN MMBTU/MONTH
Qpc(test) = FINAL PICTURED CLIFFS FLOW TEST IN MMBTU/DAY
Qfc(test) = FINAL FRUITLAND COAL FLOW TEST IN MMBTU/DAY
Days Produced(1) = NUMBER OF DAYS WELL WAS ON IN THE FIRST MONTH
Qpci(decline) = INITIAL MONTHLY PRODUCTION RATE TO BE USED IN FORECASTING FUTURE PICTURED CLIFFS PRODUCTION IN MMBTU/MONTH

Step Three: Calculate Pictured Cliffs Abandonment Rate

$$Qpca = Operating\ Cost / \{Price * NRI * (1.0 - Tax)\}$$

WHERE:

Qpca = PICTURED CLIFFS ABANDONMENT RATE IN MMBTU/MONTH
Operating Cost = MONTHLY OPERATING EXPENSE = $500.00/MONTH
Price = WELLHEAD GAS PRICE = $1.65/MMBTU
NRI = AVERAGE NET REVENUE INTEREST = 84%
Tax = STATE AND LOCAL SEVERANCE AND ADVALOREM TAXES = 9%

THEREFORE:

Qpca = $500.00 / {$1.65 * 0.84 * (1.0 - 0.09)} = 396 MMBTU/MONTH

Step Four: Calculate Pictured Cliffs Decline Rate

$$D = \{Qpci(decline) - Qpca\} / Gp$$

WHERE:

D = NOMINAL DECLINE RATE (Fraction/Month)
Qpci(decline) = INITIAL MONTHLY PRODUCTION RATE IN MMBTU/MONTH AS

CALCULATED IN STEP TWO

Qpca = PICTURED CLIFFS ABANDONMENT RATE IN MMBTU/MONTH
= 396 MMBTU/MONTH

Gp = ULTIMATE PICTURED CLIFFS GAS RESERVES IN MMBTU AS CALCULATED IN STEP ONE.

Step Five: Calculate Future Pictured Cliffs Production In Future Month "X"

$$Qpc(x) = Qpci(decline) * \exp\{-D * t(x)\}$$

WHERE:

Qpc(x) = PICTURED CLIFFS PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"

Qpci(decline) = INITIAL MONTHLY PRODUCTION RATE IN MMBTU/MONTH AS CALCULATED IN STEP TWO

D = NOMINAL DECLINE RATE (Fraction/Month) AS CALCULATED IN STEP FOUR

t(x) = NUMBER OF MONTHS FROM INITIAL PRODUCTION TO A GIVEN MONTH "x"

Step Six: Calculate Fruitland Coal Rate In Future Month "X"

$$Qfc(x) = Qt(x) - Qpc(x)$$

WHERE:

Qfc(x) = FRUITLAND COAL PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"

Qt(x) = TOTAL WELL PRODUCTION IN MMBTU FOR A GIVEN MONTH "x"

Qpc(x) = PICTURED CLIFFS PRODUCTION IN MMBTU FOR A GIVEN MONTH "x" AS CALCULATED IN STEP FIVE

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

070 FARMINGTON, NM

CASE NO. 10970
ORDER NO. R-10149

APPLICATION OF MERRION OIL & GAS CORPORATION FOR DOWNHOLE COMMINGLING AND AN UNORTHODOX COAL GAS WELL LOCATION, RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 12, 1994, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 11th day of July, 1994 the Division Director, having considered the testimony, the record and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) The applicant in this case, Merrion Oil & Gas Corporation ("Merrion"), is the owner and operator of the Carnahan Com Well No. 1 (API No. 30-045-08946), located 990 feet from the South and East lines (Unit P) of Section 35, Township 30 North, Range 12 West, NMPM, San Juan County, New Mexico.

(3) Said well was originally drilled and completed in the winter of 1960-1961 as a Basin-Dakota gas well. In early 1972 the Dakota interval was plugged back and the well was recompleted to the Flora Vista-Mesaverde Pool where it produced until May, 1990, at which time it was shut-in when it was no longer able to produce from the Mesaverde interval. At this time Merrion is proposing to plug back the existing Mesaverde perforations in the wellbore and recomplete up-hole in both the Undesignated Fulcher Kutz-Pictured Cliffs Pool, in which the SE/4 of said Section 35 will be dedicated to form a standard 160-acre gas spacing and proration unit, and the Basin-Fruitland Coal (Gas) Pool, in which the E/2 of said Section 35 will be dedicated to form a standard 320-acre gas spacing and proration unit.

(4) The applicant now seeks authority to commingle production from both the Pictured Cliffs and Fruitland Coal intervals in said wellbore.

(5) Since the proposed recompletion of the well into the Basin-Fruitland Coal (Gas) Pool would result in the location being an "off-pattern" unorthodox coal gas well location, Merrion originally sought in this matter an exception to the well location restriction provisions (see Rule 7) of the Special Rules and Regulations for the Basin Fruitland Coal (Gas) Pool, as promulgated by Division Order No. R-8768, as amended.

(6) Subsequent to this hearing the Division issued on May 19, 1994 Administrative Order NSL-3393, which order approved the subject Carnahan Com Well No. 1 as an unorthodox Basin-Fruitland Coal Gas well location; therefore, that portion of the immediate application requesting approval of an unorthodox coal gas well location for said well is deemed unnecessary and should now be dismissed.

(7) Testimony presented by the applicant indicates that gas production capabilities from both the Pictured Cliffs and Fruitland Coal intervals in this general area of the San Juan Basin are expected to be marginal in nature, thereby making the downhole commingling of both zones practical in order to adequately recover Basin-Fruitland Coal gas and conventional Pictured Cliffs gas reserves underlying both respective proration units in a prudent manner.

(8) The ownership within the Basin-Fruitland Coal (Gas) Pool and the Undesignated Fulcher Kutz-Pictured Cliffs Gas Pool underlying each respective proration unit is not common.

(9) The applicant has notified all working interests owning an interest in either the Pictured Cliffs or Fruitland Coal interval within the subject proration units of its proposed downhole commingling.

(10) The applicant further demonstrated through its evidence and testimony that:

(a) there will be no crossflow between the two commingled pools;

(b) neither commingled zone exposes the other to damage by produced liquids;

(c) the fluids from each zone are compatible with the other;

(d) the bottomhole pressure of the lower pressure zone should not be less than 50 percent of the bottomhole pressure of the higher pressure zone adjusted to a common datum; and,

(e) the value of the commingled production is not less than the sum of the values of the individual production.

(11) No offset operator and/or interest owner appeared at the hearing in opposition to the proposed application.

(12) Due to the nature of gas production from the Basin-Fruitland Coal (Gas) Pool, straight allocation of gas volumes from both zones is not appropriate. The applicant therefore seeks the adoption of a monthly allocation formula, based on initial production test and known/assumed parameters from the Pictured Cliffs zone whereby its initial rate, estimated ultimate recovery, and decline rate can be determined. Any production rate over what is calculated for the Pictured Cliffs utilizing the applied formula can be attributed to the Fruitland coal gas interval. See Exhibit "A" attached hereto and made a part hereof for additional reference.

(13) Approval of this application is in the best interest of conservation, will serve to prevent waste and protect correlative rights.

(14) The operator should be responsible for reporting the monthly gas production from said well by utilizing the proposed allocation formula.

(15) An annual report should be submitted by the operator to both the Aztec and Santa Fe offices of the Division showing the complete computations for each month.

(16) Any condensate production should be allocated entirely to the Pictured Cliffs interval. Water production should be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

(17) Any change in the method of gas allocation between the two pools should be made only after due notice and hearing.

(18) To afford the Division an opportunity to assess the potential of waste and to expeditiously order the appropriate remedial action, the operator should notify the Aztec District Office of the Division any time the subject well is shut-in for seven consecutive days.

S THEREFORE ORDERED THAT:

The application of Merrion Oil & Gas Corporation ("Merrion"), for authority le Undesignated Fulcher Kutz-Pictured Cliffs Pool gas and Basin-Fruitland Coal production within the wellbore of its existing Carnahan Com Well No. 1 (API -08946), located 990 feet from the South and East lines (Unit P) of Section 35, 0 North, Range 12 West, NMPM, San Juan County, New Mexico, is hereby

Said well shall be dedicated to a standard 320-acre gas spacing and proration Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 35 and to a 0-acre gas spacing unit for the Undesignated Fulcher Kutz-Pictured Cliffs Pool E/4 of said Section 35.

The portion of this application requesting an unorthodox coal gas well location ect well shall be dismissed.

The allocation of gas from both zones shall be subject to the monthly rmula hereby adopted for this well, as further referenced in Exhibit "A" attached nade a part hereof.

The operator is responsible for reporting the monthly gas production from the to the Division by utilizing the allocation formula herein adopted.

Any condensate production from the subject well shall be allocated entirely signated Fulcher Kutz-Pictured Cliffs Pool. Water production shall be reported acceptable to the supervisor of the Aztec District Office of the Division.

Any variance in the method of gas allocation herein approved by this order le only after due notice and hearing.

The operator of the subject well shall immediately notify the supervisor of the ct Office of the Division any time the well has been shut-in for seven consecutive all concurrently present, to the Division, a plan for remedial action.

Jurisdiction of this cause is retained for the entry of such further orders as the y deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

S E A L

Exhibit "A"

CASE NO. 10970

DIVISION ORDER NO. R-10149

MERRION OIL & GAS CORPORATION

CARNAHAN COM WELL NO. 1

API NO. 30-045-08946

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